ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	
Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic 16 Vehicle Monitoring Systems	PR Docket No. 93-61 RM-8013

To: The Commission

Comments of Telxon Corporation

Telxon Corporation ("Telxon"), by its attorneys, respectfully submits its comments in response to the Notice of Proposed Rule Making ("NPRM") issued in the above-captioned proceeding. In the NPRM, the Commission proposes to replace its interim rules regarding Automatic Vehicle Monitoring ("AVM") systems with rules for a more encompassing Location and Monitoring Service ("LMS") that will be licensed in the entire 902-928 MHz band.[1] Although Telxon recognizes the merit in licensing LMS systems for the reasons discussed in the NPRM, Telxon urges the Commission to locate the proposed new systems in another area of the radio spectrum or, if that is not possible to restrict LMS to one quarter of the 902-928 MHz band.

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8 F.C.C. Rcd 2502 (1993).

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List A B C D E

I. CURRENT USERS ARE OPERATING WITHIN THE 902-928 MHZ BAND IN THE PUBLIC INTEREST

Telxon is a manufacturer and supplier of personal computer-based wireless local area networks ("LANs") which communicate by means of spread spectrum technology under Part 15 of the Commission's Rules.[2] Telxon's customers, along with those of other industry members, have made significant investments in this technology. As the Commission is well aware, spread spectrum is a highly spectrally efficient, sophisticated technology. Indeed, in modifying Parts 2 and 15, the Commission recently acknowledged its "desire to encourage the development and implementation of this exciting new family of technologies and therefore [sought] to provide an appropriate regulatory framework in which there is maximum flexibility for the use of spread spectrum systems."[3] Hence, Telxon has designed its networks to operate in the 902-928 MHz band.

Wireless LANs, which were the only spread-spectrum technologies named by the Commission in amending its rules relating to spread spectrum systems,[4] enable users to share and interface with files, documents, and network resources without physical connection of portable, remote units to other such units, a central computer, or a central processing unit. A wireless

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[2] 47 C.F.R. § 15.247.

[3] Amendment of Parts 2 and 15 of the Rules With Regard to the Operation of Spread Spectrum Systems, 5 F.C.C. Rcd. 4123, 4124 (1990).

[4] See id.

LAN installation can consist of as many as 35 transmit/receive units costing from $1,200 to $5,000 each. If the Commission were to allow the proposed LMS providers to use the full 902-928 MHz band and force current spread spectrum users to accept interference from LMS providers, these substantial investments will have been largely wasted. Additionally, Telxon's and other wireless LAN providers' customers would suffer dramatic decreases in productivity and efficiency in response to the establishment of LMS. These materially adverse effects, which could deal a significant blow to the currently exploding LAN industry, would be even more pronounced were all existing unlicensed 902-928 MHz users forced to migrate --at potentially great expense and service disruption -- to other frequency bands.[5]

The wireless LAN industry began in 1991 and has recently experienced dramatic growth that promises to continue as more and more users discover its benefits. In 1992 alone, users spent approximately $39 million dollars on wireless LANs[6] and the U.S. market for wireless LANs could approach $700 million dollars by 1996.[7] Telxon estimates that there are currently over 200,000 devices operating on wireless LANs, representing more than 10,000 distinct wireless networks. A significant portion of these devices

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[5] In addition, Telxon's customers would be left holding useless equipment that will be virtually worthless because such equipment would be rendered inoperable along the 902-928 Mhz band.

[6] Stanley Gibson, "Easy Installation and Low Prices Are Making Wireless LANs Appealing," PC WEEK S14 (1993).

[7] Jim Slane, "On the Road Again," DIGITAL NEWS & REVIEW 26 (1993).

and networks have been supplied by Telxon. These facilities represent an investment of over $50 million by U.S. companies in the last two years.

Telxon's LANs are designed to be used on individual commercial or industrial premises and have found successful applications in groceries, drug stores, and other retail establishments, as well as banks, warehouses, hospitals, and other offices. In a typical retail application, floor personnel are able to examine stock on shelves and immediately determine whether additional items are available on site or when delivery is expected. The convenience and speed with which this information is relayed through the use of Telxon systems results in increased retailer efficiencies that are passed on to consumers in the forms of increased service quality and lower prices. Several of the nation's largest retailers are among the successful users that capitalize on this leading edge technology.

One of the newest and most promising uses of Telxon's technology has arisen in the health care area. Wireless LAN equipment is now used to relay patient data directly from a hospital bedside to computers where the data can be analyzed, stored, charted, and reported. This enables medical personnel to provide more effective, "real time" responses to medical emergencies and thereby provides a higher level of patient care while simultaneously reducing health care costs at a time when reducing such costs has become a primary national priority. As this demonstrates, LANs currently

have comparably meritorious applications to those of LMS discussed in the NPRM.

II. THE COMMISSION SHOULD LICENSE LMS IN A MORE SUITABLE FREQUENCY BAND

The Commission has noted in its NPRM that the 902-928 MHz band is allocated primarily for Federal Government Radiolocation, Fixed, and Mobile Services. Industrial, Scientific, and Medical ("ISM") devices under Part 18 of the Commission's Rules share the band on a secondary basis. Finally, amateur radio and unlicensed devices such as Telxon's LANs have been recognized as legitimate users of this band.[8] Given the increasing utilization and importance of spread spectrum LANs in this band, the Commission must not adopt rules that will hinder the continued development of these and other services that operate in the 902-928 MHz band. Yet, assigning an expanded version of AVM service -- in terms of the frequencies used and applications permitted -- all but guarantees congestion that will hinder these uses.

Telxon's LAN facilities operate at power levels of approximately 750 milliwatts. Cordless telephones and other Part 15 devices also operate at low power levels. Because of their low power levels, these devices are highly spectrally efficient. The Commission proposes, however, that LMS will operate at significantly higher power levels and using

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[8] NPRM at 2506.

significantly more spectrum than existing Part 15 users. Although, Telxon is empathetic to the need of LMS providers for a reliable, interference-free spectrum, Telxon submits that the public interest warrants the permanent allocation of LMS in a frequency band less susceptible to inevitable interference, rather than further squeezing it into an already crowded frequency block. This is particularly the case given that the proposed allocation would hinder development of spread spectrum technologies when, pursuant to Commission encouragement, users are investing potentially hundreds of millions of dollars to develop advanced systems using such technologies.

III. OTHER ALTERNATIVES ARE AVAILABLE

Telxon respectfully suggests that the Commission would best serve the public interest by relocating LMS to another area of the radio spectrum. Indeed, in allocating new spectrum Personal Communications Services ("PCS"), the Commission noted that "tracking and acknowledgement" are among the functions that PCS would perform.[9] The new and broader category of services envisioned for LMS in the NPRM is particularly appropriate given that the proposed rules contemplate applications for locating animate as well as inanimate objects. Thus, the Commission should deem that LMS constitutes a PCS application and license it accordingly.

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[9] Amendment of the Commission's Rules to Establish New Personal Communications Services, 7 F.C.C. Rcd. 5676, 5696 (1992).

If the Commission refrains from relocating LMS to other frequencies, Telxon recommends that one quarter, but no more than one half, of the band be devoted to LMS (subordinate to government and ISM uses). Pursuant to Section 15.247, spread spectrum devices could then continue to use the remaining spectrum in the band, subject to the current interference acceptance standards but without new interference from LMS.[10] This plan would also encourage developers of both LMS and spread spectrum consumer applications to adopt the most spectrally efficient technologies, as Telxon and other Part 15 users have done. The Commission has noticed that "wide band" LMS devices range from 4 to 8 megahertz in width.[11] With the proper incentive, even more efficient LMS methods can be developed. For example, the use of triangulation, which consists of the use of a single, narrowband channel transmitted from one location and received at two other locations, can determine the location of an object using significantly less spectrum than the spectrum gobbling pulse-ranging multilateration described in the NPRM.[12] The Commission should encourage the development and use of such spectrum-efficient methods.

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[10] Telxon's proposal would provide sufficient spectrum for an 8 megahertz, 4 megahertz, and 1 megahertz LMS system in each area.

[11] NPRM at 2504.

[12] Id.

Conclusion

If the Commission cannot find any acceptable alternatives to those proposed in its NPRM, the impact of licensing LMS technology in the proposed frequency range would have a potentially devastating effect on current users of other services on this band by further limiting the spectrum in which such users have to operate. For these reasons, Telxon respectfully submits that the Commission should reexamine its proposals for allocating spectrum to the new Location and Monitoring Service and instead select a plan that will serve the public interest by accommodating the needs of both LMS and existing users of the entire 902-928 MHz band.

Respectfully submitted,

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